North Carolina SPICE
Statewide Program for Infection Control & Epidemiology

"AN OUNCE OF *PREVENTION* IS WORTH A POUND OF *CURE*: WHY WE HAVE VACCINES"

Evelyn Cook, RN, CIC

Associate Director of SPICE

December 10th, 2024

https://spice.unc.edu/

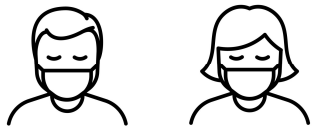
https://spice.unc.edu/ask-spice/

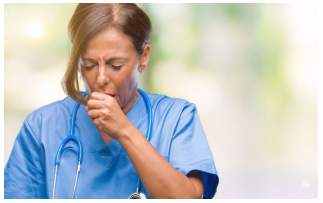
OVERVIEW

- Review CDC's infection prevention measures to prevent transmission of viral respiratory pathogens
- Discuss current level of viral respiratory pathogen activity
- Recognize the adverse events associated with low vaccination rates
- Provide an overview of the current CDC and Advisory Committee for Immunization Practices (ACIP) recommendations for immunization against the following respiratory pathogens:
  - SARS-CoV-2
  - Influenza
  - Respiratory Syncytial Virus (RSV)
  - Pneumococcal

GENERAL MEASURES OF PREVENTION

- Optimize the use of administrative and engineering controls and indoor air quality
- Communicate about recommended infection prevention practices
- Practice respiratory hygiene and cough etiquette
- Consider broader use of source control
- Use appropriate transmission-based precautions based on suspected diagnosis
- Monitor and manage ill healthcare personnel





Respiratory Virus Activity

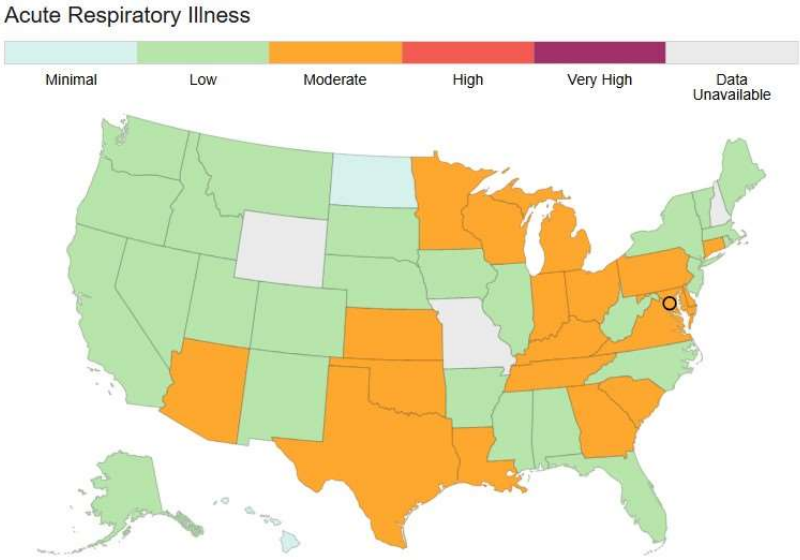
- As of December 6, 2024, the amount of acute respiratory illness causing people to seek healthcare is moderate nationally.
- COVID-19 activity remains low in most areas but is expected to increase in the coming weeks.
- Seasonal flu activity remains low nationally but continues to increase slowly
- RSV activity is moderate and continues to increase in most areas of the United States, particularly in young children.

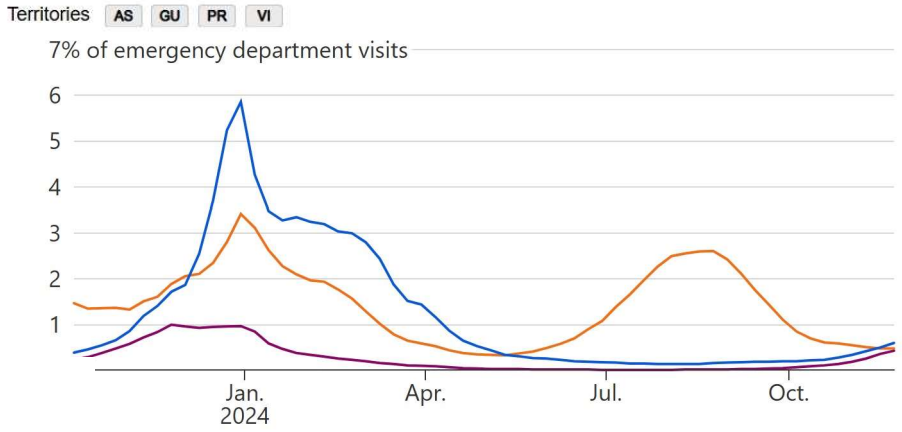
HTTPS://WWW.CDC.GOV/RESPIRATORY-VIRUSES/DATA/INDEX.HTML

Monitored using the acute respiratory illness metric (ARI)

- Diagnoses from emergency department visits for respiratory illness
- Common cold, influenza, RSV and COVID-19
- Illnesses that may not present with fever

https://www.cdc.gov/respiratory-viruses/data/activity-levels.html



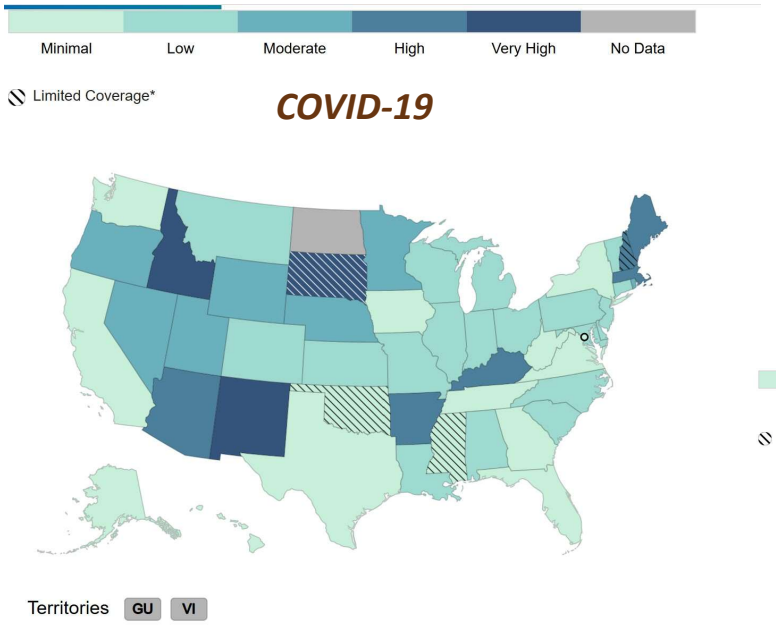


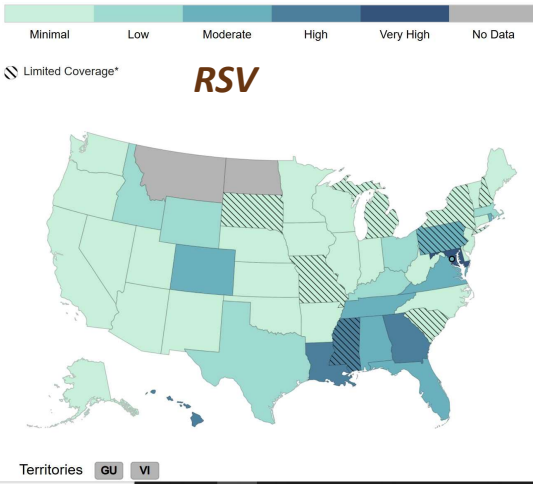
Respiratory Virus
COVID-19 Influenza RSV

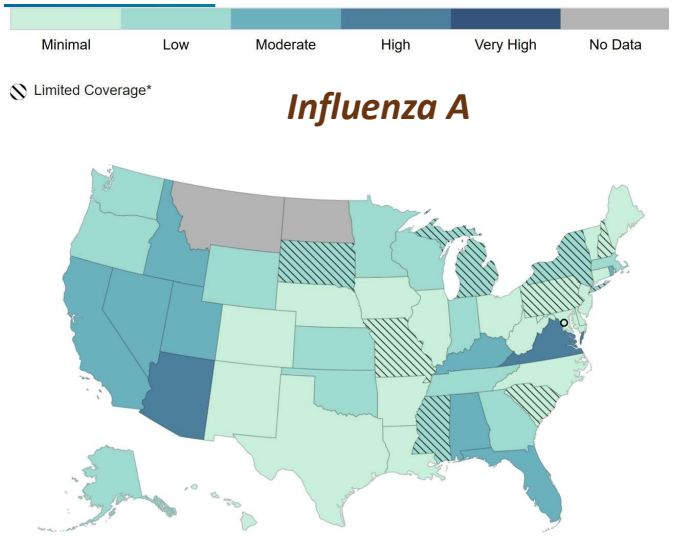
Data last updated on December 4, 2024 and presented through November 30,

SPICE

WASTEWATER VIRAL ACTIVITY LEVEL







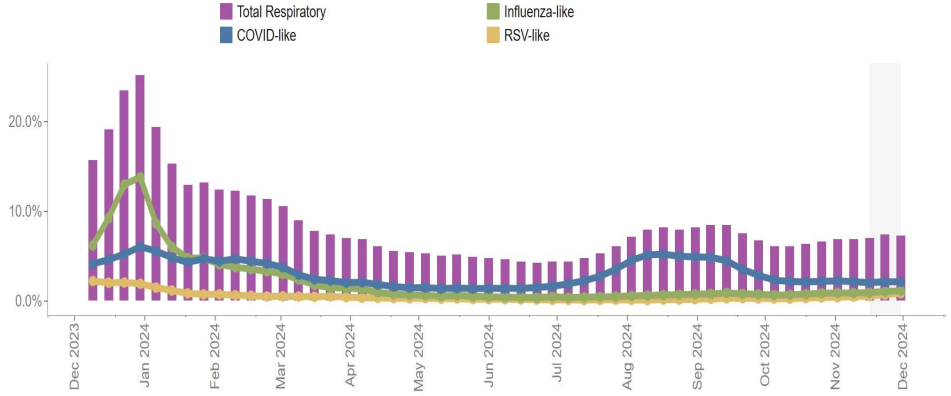
https://www.cdc.gov/respiratory-viruses/data/activity-levels.html

NORTH CAROLINA

Updated Every Wednesday by approximately 12:00 p.m.
Last updated December 4, 2024

Emergency Department Visits for Respiratory Viruses

Latest Week: **7.3% of emergency room visits** had symptoms of a respiratory virus, **a decrease** from the week before. (The week before was 7.4%.)

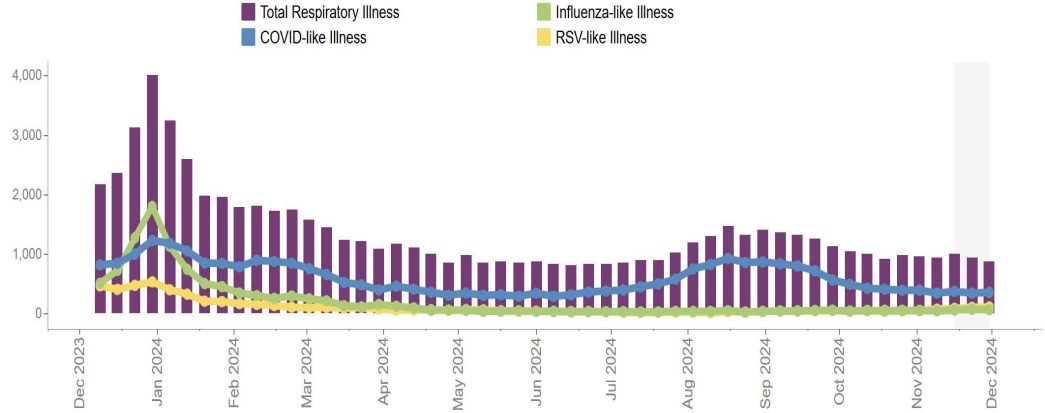


Percentage of North Carolina emergency department visits with symptoms or a diagnosis of a respiratory virus. More info

https://covid19.ncdhhs.gov/dashboard

Hospital Admissions from the Emergency Department

Latest week: There were **877 hospital admissions** from the emergency department for people who were diagnosed with or had symptoms of a respiratory virus.This includes, but is not limited to, Influenza, RSV or COVID-19. This is **a decrease** from the week before. (The week before was 949 hospital admissions from the emergency department)



Number of North Carolina hospital admissions from the emergency department with symptoms or a diagnosis of a respiratory virus. More info

https://covid19.ncdhhs.gov/dashboard/respiratory-virus-surveillance

OVERVIEW

- Review CDC's infection prevention measures to prevent transmission of viral respiratory pathogens
- Discuss current level of viral respiratory pathogen activity
- Recognize the adverse events associated with low vaccination rates
- Provide an overview of the current CDC and Advisory Committee for Immunization Practices (ACIP) recommendations for immunization against the following respiratory pathogens:
  - SARS-CoV-2
  - Influenza
  - Respiratory Syncytial Virus (RSV)
  - Pneumococcal

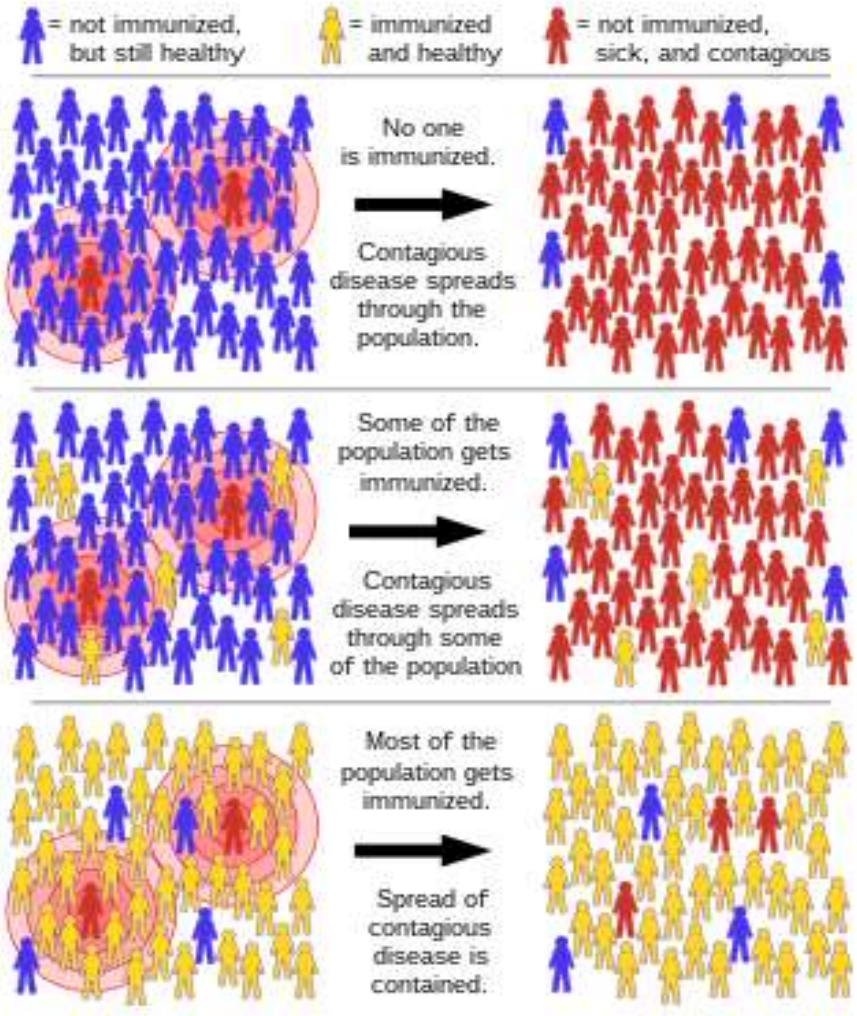
LOW IMMUNIZATION RATES IN THE UNITED STATES

- Recent decreases in coverage with most of the ACIP-recommended childhood vaccines could lead to a resurgence of vaccine-preventable diseases such as measles, varicella, and rotavirus and their associated morbidity and mortality.[1]
- Among kindergarten students, vaccination coverage continues to decline as exemptions increase, setting the stage for accumulation of clusters of under vaccinated children, which can lead to outbreaks [1]
- Vaccination hesitancy has been a concern for some time in the United States, but it is an issue that has become increasingly prevalent in the past 20 years.[2]
- Consequences include re-emergence of dangerous diseases, economic consequences for communities, and furthered perpetuation of political divides[2]

When a community is vaccinated, everyone is protected, even those who can't be vaccinated due to underlying health conditions.

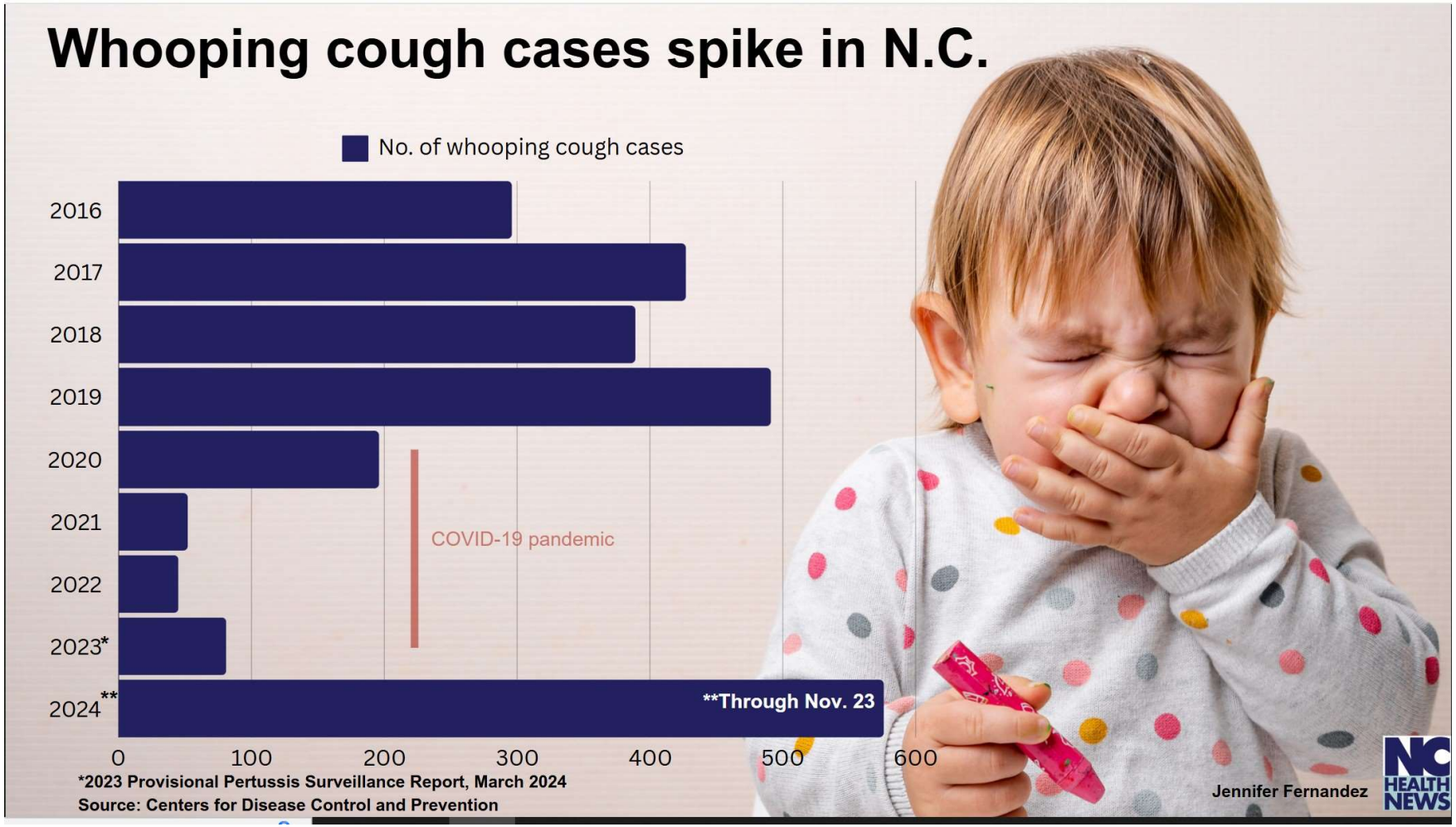
[1]MMWR September 26, 2024, and October 17,2024

[2]Ballard Brief-Low Immunization Rates in the U.S.



- When most of the American population is vaccinated against transmissible diseases ***herd or community immunity*** can slow disease transmission including protection against the disease among persons who have not received the vaccines and reduce the risk at-large of severe infections and adverse consequences of those diseases.[1]

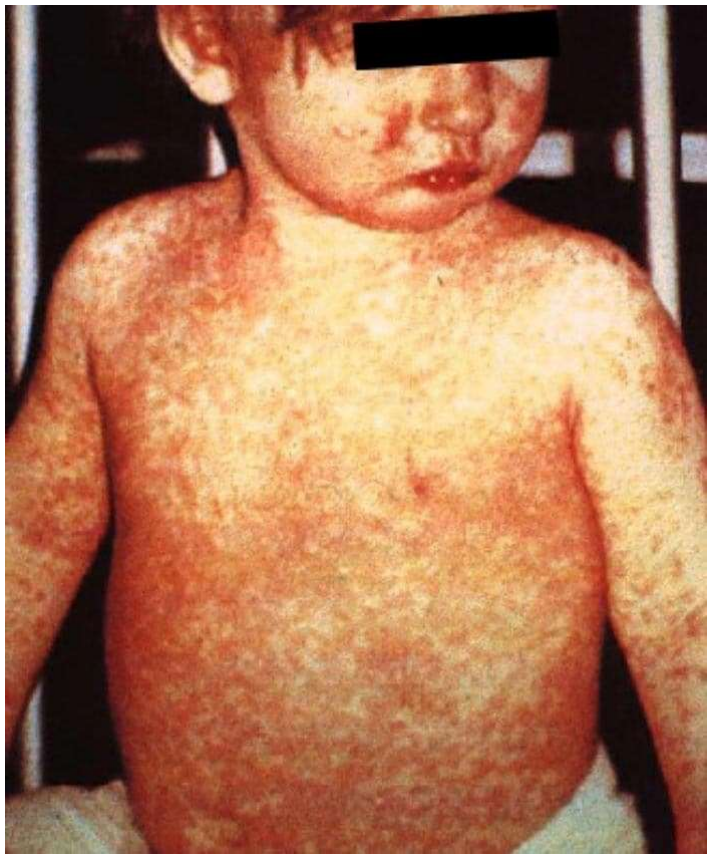
[1]https://pmc.ncbi.nlm.nih.gov/articles/PMC10957248/



https://www.northcarolinahealthnews.org/2024/12/03/whooping-cough-cases-spike-in-n-c/

SPICE

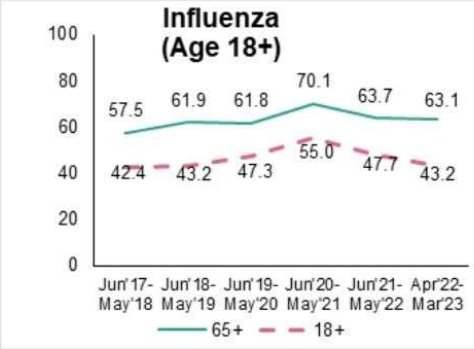
- New estimates from the WHO and CDC revealed large or disruptive measles outbreaks in 57 countries in 2023, with more than 10 million people infected — a ***20% increase*** from the previous year.
- As a result, an estimated ***107,500 people died from measles last year***, highlighting the countries and communities where vaccination efforts are severely lacking.

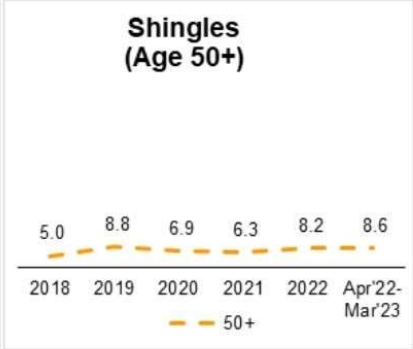


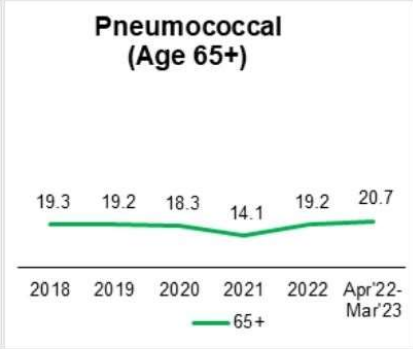
https://www.cdc.gov/measles/signs-symptoms/photos-of-measles.html?CDC_AAref_Val=https://www.cdc.gov/measles/symptoms/photos.html

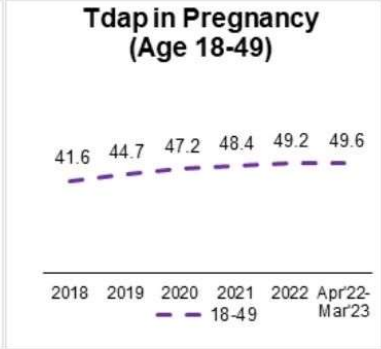
Adult and Maternal Annual Vaccinations

Annual Vaccination Rate = # of adults who received a vaccine per 100 eligible adults









Across-the-board declines in annual flu vaccination of ~4.5% during June 2021-May 2022 vs. April 2022-March 2023 Black (-1.3%) and Hispanic (-4.4%) populations had lowest annual vaccination rates compared to national average Annual vaccination rates among individuals with private payors had an additional decline of 3.3% vs. public payors	Shingles annual vaccination rate has shown a small increase during April 2022-March 2023 vs 2022 Annual vaccination rates among individuals with public payors has not recovered post-pandemic (10.1% in 2019 vs 7.6% in April 2022-March 2023)	Improvements in pneumococcal annual vaccination rates in the most recent year, primarily driven by: -Age-based recommendation vs shared clinical decision-making -Increased options, given launch of 2 newer vaccines -Increases in private channel	Tdap annual vaccination among pregnant women has increased Rates have remained constant during April 2022-March 2023, with increases <0.5% compared to 2022

IQVIA™

Sources: IQVIA LAAD and Experian Data (as of March 2023)

https://www.nfid.org/the-implications-of-low-vaccination-rates/

SPICE

NATIONAL FOUNDATION FOR INFECTIOUS DISEASES

- The implications of low vaccination rates extend well beyond the immediate protection conferred by vaccines against specific pathogens. Long-term benefits of vaccination include:
  - Heightened resilience against future outbreaks,
  - Improved educational and economic stability.
  - Another significant concern revolves around the escalating risk of antimicrobial resistance., as excessive antibiotic usage to manage vaccine-preventable infections may exacerbate this ongoing issue.
  - Additionally, compelling evidence underscores the impacts of infectious diseases like measles. The measles vaccine not only furnishes direct protection against measles but also help the immune system combat other infections.

OVERVIEW

- Review CDC's infection prevention measures to prevent transmission of viral respiratory pathogens
- Discuss current level of viral respiratory pathogen activity
- Recognize the adverse events associated with low vaccination rates
- Provide an overview of the current CDC and Advisory Committee for Immunization Practices (ACIP) recommendations for immunization against the following respiratory pathogens:
  - SARS-CoV-2
  - Influenza
  - Respiratory Syncytial Virus (RSV)
  - Pneumococcal

ROUTINE COVID-19 VACCINATION SCHEDULE
OCTOBER 31, 2024

- Ages 6 months-4 years
- Ages 5 – 11 years-have a footnote for those transition from 4-5 years during the initial vaccination series
- ***Ages 12-64 years***
- ***Ages 65 years and older***
- COVID-19 vaccination guidance for people who are moderately or severely immunocompromised for all the age groups noted above

https://www.cdc.gov/vaccines/covid-19/clinical-considerations/interim-considerations-us.html

COVID-19 VACCINE RECOMMENDATIONS 12 – 64 YRS

COVID-19 Vaccination History before 2024-2025 vaccine	Number of 2024-2025 doses indicated	Recommended 2024-2025 vaccine and interval between doses
Unvaccinated: • Initiate vaccination with 2024-2025 vaccine		
Unvaccinated	1	**2024-2025 Dose 1** (Moderna or Pfizer-BioNTech): Day 0
	OR	
	2	**2024-2025 Dose 1** (Novavax): Day 0 **2025-2025 Dose 2** (Novavax): 3-8 weeks after Dose 1
Previously vaccinated before 2024-2025: • Receive 1 dose of 2024-2025 vaccine		
1 or more doses mRNA (Moderna or Pfizer vaccine)	1	**2024-2025 Dose 1** (Moderna, Pfizer, Novavax): At least 8 weeks after last dose
1 dose Novavax	1	**2024-2025 Dose 1** (Novavax): 3-8 weeks after last dose
2 or more doses Novavax	1	**2024-2025 Dose 1** (Moderna, Pfizer, Novavax): At least 8 weeks after last dose

COVID-19 VACCINE RECOMMENDATIONS 65 YEARS AND OLDER

COVID-19 Vaccination History before 2024-2025 vaccine	Number of 2024-2025 doses indicated	Recommended 2024-2025 vaccine and interval between doses
Unvaccinated: Initiate vaccination with 2024-2025 vaccine		
Unvaccinated	2	**2024-2025 Dose 1** (Moderna or Pfizer-BioNTech): Day 0 **2024-2025 Dose 2** (Moderna or Pfizer-BioNTech): 6 months (minimum 2 months) after Dose 1
	OR	
	3	**2024-2025 Dose 1** (Novavax): Day 0 **2025-2025 Dose 2** (Novavax): 3-8 weeks after Dose 1 **2024-2025 Dose 3** (Moderna, Novavax or Pfizer-BioNTech): 6 months (minimum 2 months) after Dose 2
Previously vaccinated before 2024-2025: Receive 2 dose of 2024-2025 vaccine		
1 or more doses mRNA (Moderna or Pfizer vaccine)	2	**2024-2025 Dose 1** (Moderna, Pfizer, Novavax): At least 8 weeks after last dose **2024-2025 Dose 2** (Moderna, Novavax or Pfizer-BioNTech): 6 months (minimum 2 months) after Dose 2
1 dose Novavax	2	**2024-2025 Dose 1** (Novavax): 3-8 weeks after last dose **2024–2025 Dose 2** (Moderna, Novavax, or Pfizer-BioNTech): 6 months (minimum interval 2 months) after 2024–2025 Dose 1
2 or more doses Novavax	2	**2024-2025 Dose 1** (Moderna, Pfizer, Novavax): At least 8 weeks after last dose **2024–2025 Dose 2** (Moderna, Novavax, or Pfizer-BioNTech): 6 months (minimum interval 2 months) after 2024–2025 Dose 1

UP TO DATE COVID-19 DEFINITION

People ages 12-64 yeas	People ages 65 years and older
1 dose of the 2024-2025 Moderna COVID-19 vaccine OR	2 doses of any 2024-2025 COVID-19 vaccine 6 months apart
1 dose of the 2024-2025 Pfizer-BioNTech COVID-19 vaccine OR	*While it is the recommended to get 2024-2025 COVID-19 vaccine doses 6 months apart, the minimum time is 2 months apart, which allows flexibility to get the second dose prior to typical COVID-19 surges, travel, life events, and healthcare visits*
1 dose of the 2024-2025 Novavax vaccine unless you are receiving the COVID-19 vaccine for the very first time.	

INFLUENZA

- Vaccine recommendations;
  - Routine annual influenza vaccination is recommended for all persons aged >6 months of age who do not had contraindications
  - Timing-September or October; continue through out the season as long as influenza viruses are circulating
  - No preference ***except for adults aged >65 years-***

https://www.cdc.gov/flu/media/pdfs/2024/08/acip-2024-25-summary-of-recommendations.pdf

ADULTS AGED ≥65 YEARS

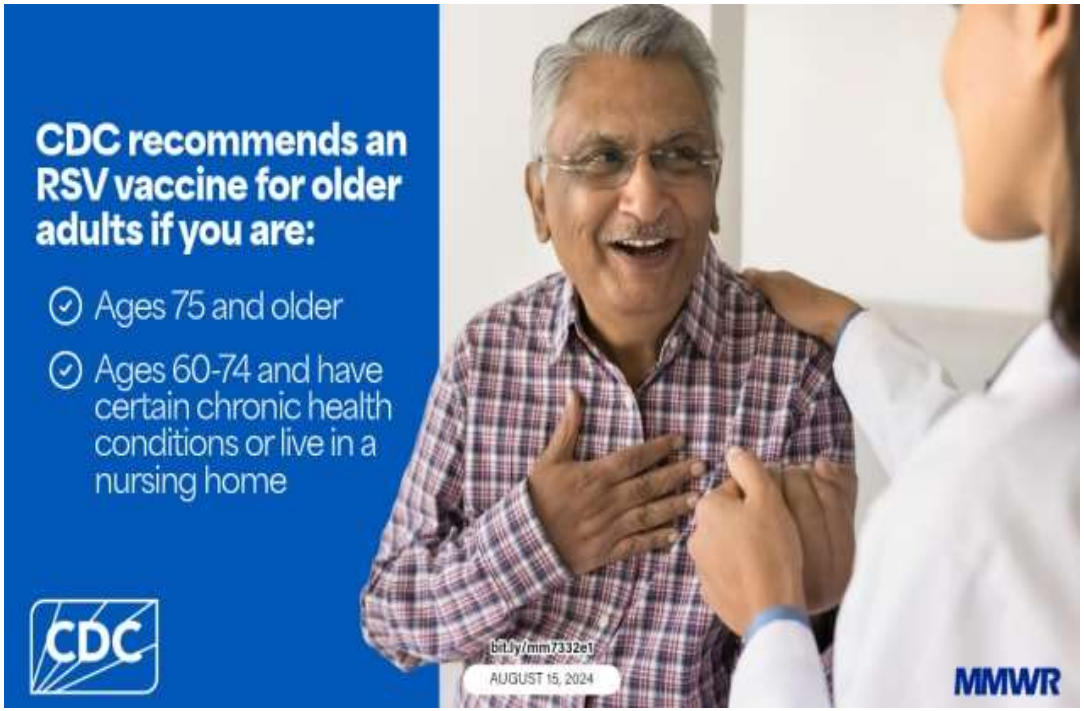
ACIP recommends that adults aged ≥65 years preferentially receive any one of the following:

- High-dose inactivated influenza vaccine (HD-IIV3, Fluzone High-Dose),
- Recombinant influenza vaccine (RIV3, Flublok), or
- Adjuvanted inactivated influenza vaccine (aIIV3, Fluad).

If none of these three vaccines is available at a vaccination opportunity, then any other age-appropriate influenza vaccine should be used.

Data support greater potential benefit of high-dose inactivated, adjuvanted inactivated, or recombinant vaccines relative to standard-dose unadjuvanted IIVs in this age group, with the most data available for HD-IIV3; but comparisons of these vaccines with one another are limited.

RESPIRATORY SYNCYTIAL VIRUS (RSV)



https://www.cdc.gov/mmwr/volumes/73/wr/mm7332e1.htm

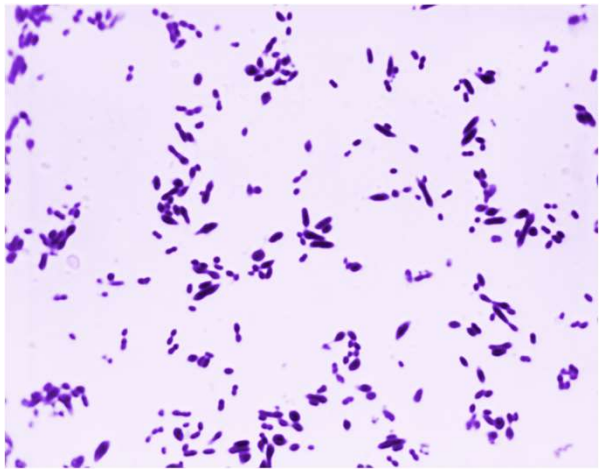
Respiratory syncytial virus (RSV) is a major cause of respiratory illness and hospitalization in older adults during fall and winter in the United States.

On June 26, 2024, the Advisory Committee on Immunization Practices voted to update this recommendation as follows: a single dose of any Food and Drug Administration–approved RSV vaccine (Arexvy [GSK]; Abrysvo [Pfizer]; or mResvia [Moderna]) is now recommended for all adults aged ≥75 years and for adults aged 60–74 years who are at increased risk for severe RSV disease.

Adults who have previously received RSV vaccine should not receive another dose.

PNEUMOCOCCAL

- *Streptococcus pneumoniae (pneumococcus) is a common bacterial cause of respiratory tract infections, bacteremia, and meningitis.*
- Invasive pneumococcal disease (IPD), a pneumococcal infection in a normally sterile site (e.g., blood, cerebrospinal fluid, bone, or joint space), can result in severe morbidity or mortality.
- Adults with certain underlying conditions or risk factors that increase the risk for pneumococcal disease (risk conditions)* and those aged ≥65 years are at increased risk and have experienced IPD case fatality ratios exceeding 10%.



Pneumococcal conjugate vaccine helps protect against bacteria that cause pneumococcal disease.

PNEUMOCOCCAL CONJUGATE VACCINE

If PCV15 is used, administer a dose of PPSV23 one year later, (if PPSV23 is not available, one dose of PCV20 or PCV21 may be given) if needed (one dose is indicated, if previously administered another dose isn't needed).
The minimum interval is 8 weeks and can be considered in adults with:

An immunocompromising condition
A cochlear implant
A CS fluid leak

As of October 2024- Adults ***50*** year or older:

- Administer PCV15, PCV20, or PCV21 for all adults 50 years or older
  - Who have never received any pneumococcal conjugate vaccine
  - Whose previous vaccination history is unknown

Pneumococcal Vaccine Timing for Adults

Make sure your patients are up to date with pneumococcal vaccination.

Adults ≥50 years old
Complete pneumococcal vaccine schedules

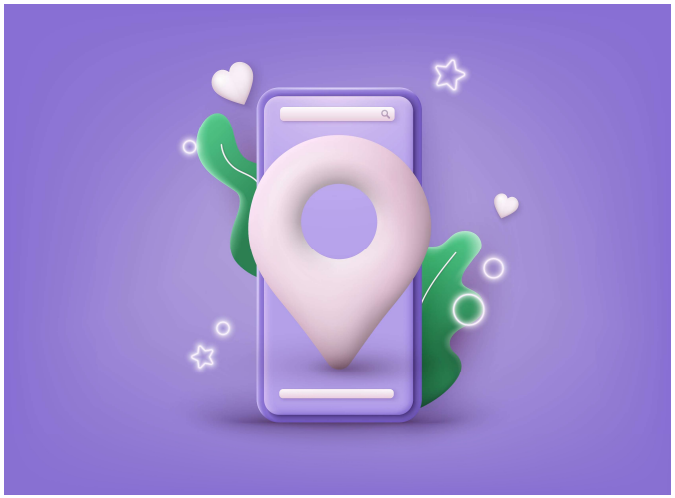
Prior vaccines	Option A	Option B
None*	**PCV20 or PCV21**	**PCV15** → ≥1 year† → **PPSV23¶**
PPSV23 only at any age	≥1 year → **PCV20 or PCV21**	≥1 year → **PCV15**
PCV13 only at any age	≥1 year → **PCV20 or PCV21**	NO OPTION B
PCV13 at any age & **PPSV23** at <65 yrs	≥5 years → **PCV20 or PCV21**	

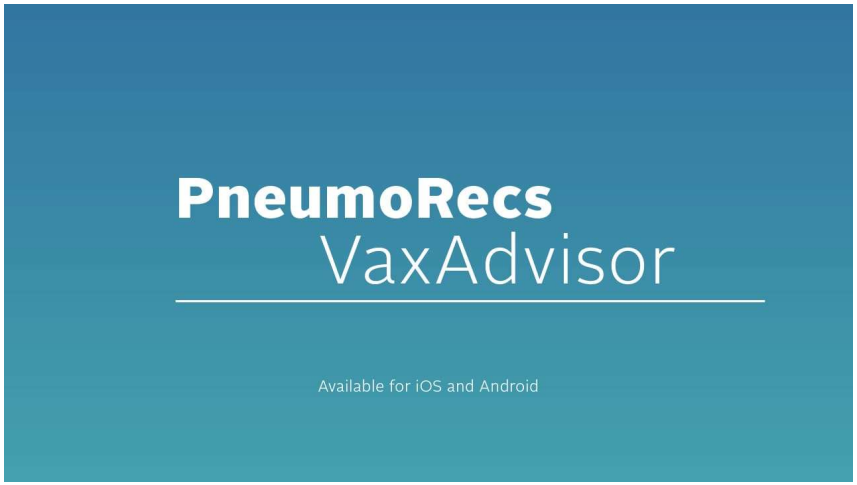
* Also applies to people who received PCV7 at any age and no other pneumococcal vaccines
¶ If PPSV23 is not available, PCV20 or PCV21 may be used
† Consider minimum interval (8 weeks) for adults with an immunocompromising condition, cochlear implant, or cerebrospinal fluid leak (CSF) leak
§ For adults with an immunocompromising condition, cochlear implant, or CSF leak, the minimum interval for PPSV23 is ≥8 weeks since last PCV13 dose and ≥5 years since last PPSV23 dose; for others, the minimum interval for PPSV23 is ≥1 year since last PCV13 dose and ≥5 years since last PPSV23 dose

https://www.cdc.gov/pneumococcal/downloads/Vaccine-Timing-Adults-JobAid.pdf

SPICE

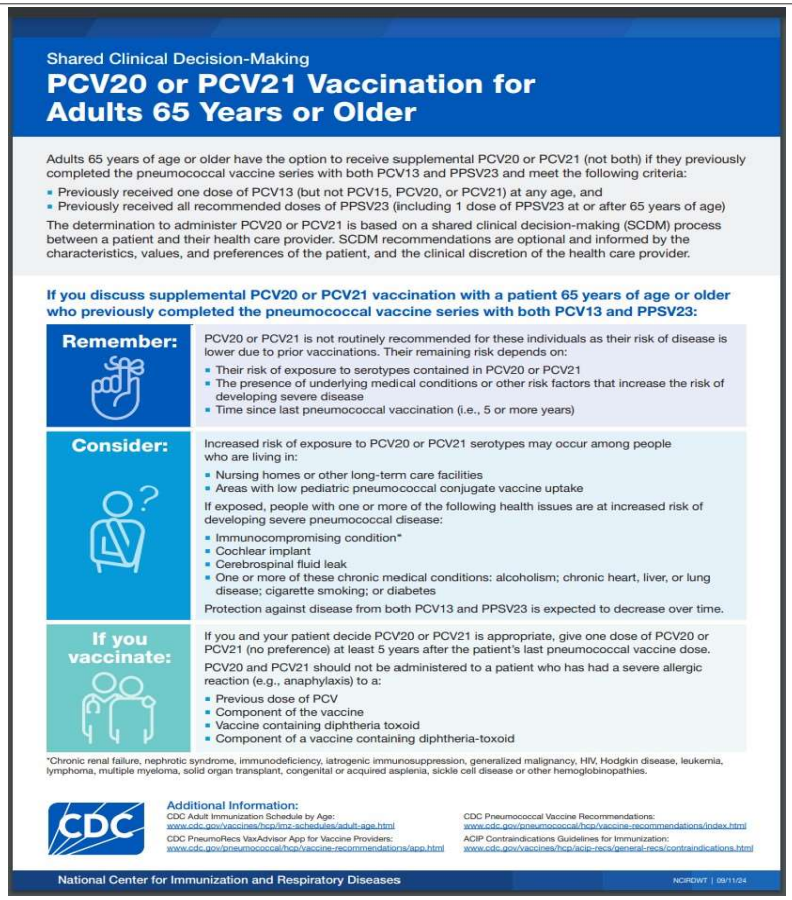
- Use PneumoRecs VaxAdvisor to quickly and easily determine which pneumococcal vaccines a patient needs and when.
- Mobile and web versions are available and free to use.
- The PneumoRecs VaxAdvisor app *was updated on September 12, 2024,* to reflect CDC's updated adult pneumococcal vaccination recommendations.





Shared clinical decision-making for those who already completed the series with PCV13 and PPSV23

Prior vaccines	Shared clinical decision-making option for adults ≥65 years old	
Complete series: **PCV13** at any age & **PPSV23** at ≥65 yrs	≥5 years → **PCV20 or PCV21**	Together, with the patient, vaccine providers **may choose** to administer PCV20 or PCV21 to adults ≥65 years old who have already received PCV13 (but not PCV15, PCV20, or PCV21) at any age and PPSV23 at or after the age of 65 years old.



Shared Clinical Decision-Making

PCV20 or PCV21 Vaccination for Adults 65 Years or Older

Adults 65 years of age or older have the option to receive supplemental PCV20 or PCV21 (not both) if they previously completed the pneumococcal vaccine series with both PCV13 and PPSV23 and meet the following criteria:

- Previously received one dose of PCV13 (but not PCV15, PCV20, or PCV21) at any age, and
- Previously received all recommended doses of PPSV23 (including 1 dose of PPSV23 at or after 65 years of age)

The determination to administer PCV20 or PCV21 is based on a shared clinical decision-making (SCDM) process between a patient and their health care provider. SCDM recommendations are optional and informed by the characteristics, values, and preferences of the patient, and the clinical discretion of the health care provider.

If you discuss supplemental PCV20 or PCV21 vaccination with a patient 65 years of age or older who previously completed the pneumococcal vaccine series with both PCV13 and PPSV23:

Remember:

PCV20 or PCV21 is not routinely recommended for these individuals as their risk of disease is lower due to prior vaccinations. Their remaining risk depends on:

- Their risk of exposure to serotypes contained in PCV20 or PCV21
- The presence of underlying medical conditions or other risk factors that increase the risk of developing severe disease
- Time since last pneumococcal vaccination (i.e., 5 or more years)

Consider:

Increased risk of exposure to PCV20 or PCV21 serotypes may occur among people who are living in:

- Nursing homes or other long-term care facilities
- Areas with low pediatric pneumococcal conjugate vaccine uptake

If exposed, people with one or more of the following health issues are at increased risk of developing severe pneumococcal disease:

- Immunocompromising condition*
- Cochlear implant
- Cerebrospinal fluid leak
- One or more of these chronic medical conditions: alcoholism; chronic heart, liver, or lung disease; cigarette smoking; or diabetes

Protection against disease from both PCV13 and PPSV23 is expected to decrease over time.

If you vaccinate:

If you and your patient decide PCV20 or PCV21 is appropriate, give one dose of PCV20 or PCV21 (no preference) at least 5 years after the patient's last pneumococcal vaccine dose.

PCV20 and PCV21 should not be administered to a patient who has had a severe allergic reaction (e.g., anaphylaxis) to a:

- Previous dose of PCV
- Component of the vaccine
- Vaccine containing diphtheria toxoid
- Component of a vaccine containing diphtheria-toxoid

*Chronic renal failure, nephrotic syndrome, immunodeficiency, iatrogenic immunosuppression, generalized malignancy, HIV, Hodgkin disease, leukemia, lymphoma, multiple myeloma, solid organ transplant, congenital or acquired asplenia, sickle cell disease or other hemoglobinopathies.

CDC

Additional Information:

CDC Adult Immunization Schedule by Age: www.cdc.gov/vaccines/hcp/imz-schedules/adult-age.html

CDC PneumoRecs VaxAdvisor App for Vaccine Providers: www.cdc.gov/pneumococcal/hcp/vaccine-recommendations/app.html

CDC Pneumococcal Vaccine Recommendations: www.cdc.gov/pneumococcal/hcp/vaccine-recommendations/index.html

ACIP Contraindications Guidelines for Immunization: www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html

National Center for Immunization and Respiratory Diseases

NCIRDIWT | 09/11/24

https://www.cdc.gov/vaccines/hcp/admin/downloads/job-aid-SCDM-pneumococcal-508.pdf

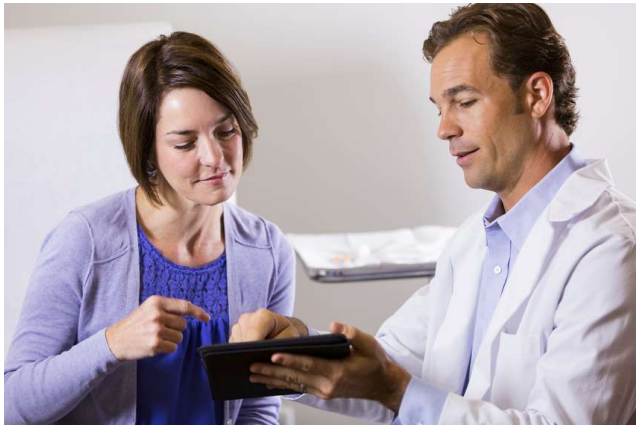
SPICE

GENERAL CONSIDERATIONS FOR VACCINES

- If you recently had COVID-19, you ***may*** delay getting a COVID-19 vaccine for 3 months after symptoms started **OR** after receiving a positive test with no symptoms
- Simultaneous administration of vaccines is defined as administering more than one vaccine on the same clinic day, at different anatomic sites, and not combined in the same syringe.
  - Routine administration of all age-appropriate doses of vaccines simultaneously, also known as coadministration, is recommended for children, adolescents, and adults if there are no contraindications at the time of the healthcare visit.

REPORTING

- Healthcare providers are **required by law** to report to VAERS:
  - Any adverse event listed in the VAERS Table of Reportable Events Following Vaccination that occurs within the specified time period after vaccinations
  - An adverse event listed by the vaccine manufacturer as a contraindication to further doses of the vaccine
- Healthcare providers are strongly **encouraged** to report to VAERS:
  - Any adverse event that occurs after the administration of a vaccine licensed in the United States, whether it is or is not clear that a vaccine caused the adverse event
  - Vaccine administration errors



https://vaers.hhs.gov/faq.html

Getting routine immunizations back on-track is a goal that we can achieve by working together

Let's RISE

Health Departments	Health Care Professional	Other Partners	Schools
▪ Leverage IIS to identify individuals behind on their vaccinations ▪ Facilitate patient return for vaccination ▪ Make vaccines easy to find and access ▪ Give strong vaccine recommendations ▪ Disseminated vaccine-related communications around catch-up ▪ Partner with schools and community organizations	▪ Send reminders to families whose children are behind on or due for vaccination ▪ Improve vaccine-related communications ▪ Offer vaccination-only appointments or hold vaccination clinics ▪ Implement systems to review vaccine history at every visit ▪ Offer strong recommendations ▪ Have standing orders ▪ Be prepared to answer questions and address concerns	▪ Know where to find accurate information on routine vaccination ▪ Connect with local public health department, ask how you can help with catch-up ▪ Help carry messages about importance of catch-up; you are trusted sources who understand your community best ▪ Engage with community members to address vaccine hesitancy ▪ Leverage data to focus catch-up efforts on communities that have fallen behind on vaccinations	▪ Share and utilize school vaccination data for catch-up ▪ Include vaccination information in back-to-school communications ▪ Help share the facts about vaccines ▪ Send reminders to families whose children are not up to date on their vaccinations ▪ Expand access to immunization services (e.g. school-based vaccination clinics) ▪ Enforce school vaccination requirements

***Let's RISE is a CDC initiative to provide actionable strategies, resources, and data to support getting all Americans back on-schedule with their routine immunizations to protect everyone from vaccine-preventable disease and disability*.**

https://www.cdc.gov/vaccines/partners/routine-immunizations-lets-rise.html

SPICE

- *Each of us has a role to play—driven by science, evidence, experience, common purpose, and common sense.*
- *Whether through advocating for local health initiatives, raising community knowledge and awareness, progressing public policy decisions, delivering on the ground, or amplifying efforts to protect those most marginalized or vulnerable, the time is now.*
- *Together, we must be clear that every child and every adult has a right to be immunized and protected from vaccine preventable diseases. This is humanly possible.*

Kate O'Brien, Director of the Department of Immunization, Vaccines and Biologicals at WHO

OVERVIEW

- Review CDC's infection prevention measures to prevent transmission of viral respiratory pathogens
- Discuss current level of viral respiratory pathogen activity
- Recognize the adverse events associated with low vaccination rates
- Provide an overview of the current CDC and Advisory Committee for Immunization Practices (ACIP) recommendations for immunization against the following respiratory pathogens:
  - SARS-CoV-2
  - Influenza
  - Respiratory Syncytial Virus (RSV)
  - Pneumococcal